



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT(S): Mindy D. Goldsborough et al.

U.S.S.N.: 09/725,897

GROUP ART UNIT: 1634

FILED: November 30, 2000

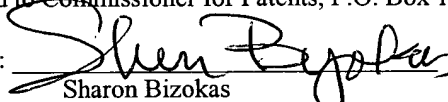
EXAMINER: Sisson, Bradley

FOR: METHODS FOR THE STORAGE AND SYNTHESIS OF NUCLEIC
ACIDS USING A SOLID SUPPORT

CERTIFICATE OF MAILING

I hereby certify this correspondence and the documents referred to as attached herein are being deposited with the United States Postal Service as First Class Mail addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on May 20, 2003.

By:


Sharon Bizokas

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

TRANSMITTAL LETTER


Transmitted herewith for filing in the above-referenced patent application are the following documents:

1. Information Disclosure Statement (4 pages) and 1449 Form (1 page);
2. European Search Report (8 pages);
3. References for IDS (7 references);
4. This transmittal letter (1 page) (x2); and
5. Return Receipt Postcard

The Commissioner is hereby authorized to charge any excess fees that may be required, or credit any overpayment to Deposit Account No. 04-1105. A duplicate copy of this sheet is enclosed.

Date: May 20, 2003

Respectfully submitted,



Kathryn A. Piffat, Ph.D.

Reg. No.: 34,901

EDWARDS & ANGELL, LLP

P.O. Box 9169

Boston, Massachusetts 02209



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Commissioner for Patents
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**SEARCH REPORT INFORMATION DISCLOSURE STATEMENT
(SUBMISSION AFTER FILING OF AN APPLICATION
BUT BEFORE FINAL REJECTION OR NOTICE OF ALLOWANCE)**

Commissioner for Patents
Washington, D.C. 20231

Sir:

Pursuant to 37 C.F.R. §§ 1.97 and 1.98, applicant(s) hereby submit(s) an Information Disclosure Statement for consideration by the Examiner.

I. LIST OF PATENTS, PUBLICATIONS OR OTHER INFORMATION

The patents, publications or other information submitted for consideration by the Office are listed on PTO-1449, attached hereto.

II. COPIES

- a. ☒ Submitted herewith is a legible copy of (i) each U.S and foreign patent; (ii) each publication or that portion which caused it to be listed; and (iii) all other information or that portion which caused it to be listed.

III. CONCISE EXPLANATION OF THE RELEVANCE

(check at least one box)

- a. ☒ Except as may be indicated below in (b), all of the patents, publications or other information are in the English language or were cited in an English language Search Report, a copy of which is attached hereto (concise explanation not required).
- b. ☐ A concise explanation of the relevance of all patents, publications or other information listed that is not in the English language is as follows:
- c. ☒ The following additional information is provided for the Examiner's consideration: WO 98/51699 and DelRio et al., which are cited in the attached European Search Report, were supplied in the IDS filed 26 September 2002

FEES

IV. THIS IDS IS BEING FILED UNDER 37 C.F.R. § 1.97(b)

(check one box)

- a. ☐ within three months of the filing date of a national application (37 C.F.R. § 1.97(b) (1)). No fee or certification is required.
- b. ☐ within three months of the date of entry of the national stage as set forth in §1.491 in an international application (37 C.F.R. § 1.97(b) (2)). No fee or certification is required.
- c. ☐ before the mailing date of a first Action on the merits (37 C.F.R. § 1.97(b) (3)). No fee or certification is required. In the event that a first Office Action on the merits has been issued, please consider this IDS under 37 C.F.R. § 1.97(c) and see the certification under 37 C.F.R. § 1.97(e) below, or, if no certification has been made, charge our deposit account a fee in the amount of \$240.00 as required by 37 C.F.R. § 1.17(p).

V. THIS IDS IS BEING FILED UNDER 37 C.F.R. § 1.97(c):

(check one box)

- ☒ before the mailing date of a Final Office Action under 37 C.F.R. § 1.113 (See 37 C.F.R. § 1.97(c) (1)) or before the mailing date of a Notice of Allowance under 37 C.F.R. § 1.311 (See 37 C.F.R. § 1.97(c) (2)).

a. ☐ No certification; therefore, a fee in the amount of \$180.00 required by 37 C.F.R. § 1.17(p).

or

b. ☒ See the certification below. No fee is required.

VI. CERTIFICATION UNDER 37 C.F.R. § 1.97(e) (check only one box)

The undersigned hereby certifies that

a. ☒ each item of information contained in the IDS was cited in a communication from a foreign Patent Office in a counterpart foreign application not more than three months prior to the filing of this IDS; or

b. ☐ no item of information contained in the IDS was cited in a communication from a foreign Patent Office in a counterpart foreign application or, to the best of my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this statement.

c. ☐ Some of the items of information were cited in a communication from a foreign Patent Office. As to this information, the undersigned certifies that each item of information contained in the IDS was cited in a communication from a foreign Patent Office in a counterpart foreign application not more than three months prior to the filing of this IDS. As to the remaining information, the undersigned hereby certifies that no item of this remaining information contained in the IDS was cited in a communication from a foreign Patent Office in a counterpart foreign application or, to the best of my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this statement.

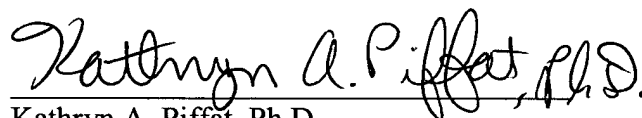
☐ Please charge Deposit Account No. 04-1105 in the amount of \$ _____ for the above-indicated fee. A triplicate copy of this paper is attached.

☒ No fee is required.

If the Examiner has any questions concerning this IDS, he/she is requested to contact the undersigned. If it is determined that this IDS has been filed under the wrong rule, the PTO is requested to consider this IDS under the proper rule (with a petition, if necessary) and charge the appropriate fee to Deposit Account No. 04-1105.

Date: May 20, 2003

Respectfully submitted,

A handwritten signature in black ink that reads "Kathryn A. Piffat, Ph.D." The signature is written in a cursive style with a horizontal line underneath the name.

Kathryn A. Piffat, Ph.D.

Reg. No.: 34,901

EDWARDS & ANGELL, LLP

P.O. Box 9169

Boston, Massachusetts 02209



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|--|----|---|------|-----------------------------------|-------|--------------------------|------------------------|
| FORM PTO-1449 INFORMATION DISCLOSURE STATEMENT | | | | ATTY DOCKET NO. 45858/55672 | | SERIAL NO. 09/725,897 | |
| | | | | APPLICANT(S): Goldsborough et al. | | | |
| | | | | FILING DATE: 11/30/2000 | | ART UNIT: 1634 | |
| UNITED STATES PATENT DOCUMENTS | | | | | | | |
| EXAM. INITIAL | | DOCUMENT NUMBER | DATE | NAME | CLASS | SUB CLASS | FIL. DAT IF APPR |
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| | | | | | | | |
| FOREIGN PATENT DOCUMENTS | | | | | | | |
| | | DOCUMENT NUMBER | DATE | COUNTRY | CLASS | SUB CLASS | TRAN YES/ |
| | | | | | | | |
| OTHER DOCUMENTS (INCLUDING AUTHOR, TITLE, DATE, PERTINENT PAGES, ETC.) | | | | | | | |
| | CA | Perret et al., Improved differential screening approach to analyse transcriptional variations in organized cDNA libraries, Gene, 208:103-115 (1998) | | | | | |
| | CB | Fellmann et al., Simplified Protocol of Solid-Phase cDNA Libraries for Multiple PCR Amplification, BioTechniques, 21(5):766, 768 & 770 (1996) | | | | | |
| | CC | Lin et al., Detection of Plant Genes Using a Rapid, Nonorganic DNA Purification Method, BioTechniques, 28(2):346-350 (2000) | | | | | |
| | CD | Natarajan et al., Paper-Based Archiving of Mammalian and Plant Samples for RNA Analysis, BioTechniques, 29(6):1328-1333 (2000) | | | | | |
| | CE | Rogers et al., Reverse transcription of an RNA genome from databasing paper (FTA®), Biotechnol. Appl. Biochem., 31:219-224 (2000) | | | | | |
| | CF | Lambert et al., cDNA library construction from small amounts of RNA using paramagnetic beads and PCR, Nucleic Acids Research, 21(3):775-77 (1993) | | | | | |
| | CG | Seah et al., DNA Databasing on FTA ^R paper: Biological Assault and Techniques for Measuring Photogenic Damage, Progress in Forensic Genetics, 8:74-77 (2000) | | | | | |
| Examiner: | | | | Date: | | | |
| | | | | | | | |



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Zweigstelle in
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abteilung

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Département à
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RECEIVED
24 MAR 2003
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CARPMAELS & RANSFORD
ACTIONED

Datum/Date

20.03.03

Zeichen/Ref./Réf.

P030951EP

Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n°

01930414.6-2402/US0100640

Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire

Whatman, Inc.

COMMUNICATION

The European Patent Office herewith transmits the supplementary partial European search report under Rule 46(1) EPC relating to the above mentioned European patent application.

Copies of the documents cited in the search report are enclosed.

The applicant's attention is drawn to the following:

The search Division informs the applicant that if the European search report is also to cover inventions other than the invention first mentioned in the claims, a further search fee must be paid for each of these inventions, within ONE MONTH after notification of this communication.

If the application has been filed up to 30 June 1999, the search fee in force before 01 July 1999 (EUR 869,-) or the equivalent applicable on the date of payment is payable.

This applies also to the search fees requested under Rule 46(1) EPC:

See also OJ EPO 06/1999, 405.

- ☐ The abstract was modified by the Search Division and the definitive text is attached to the present communication.
- ☒ Additional set(s) of copies of the documents cited in the European search report is (are) enclosed as well.



Note to users of the automatic debiting procedure:

Unless the EPO receives prior instructions to the contrary, the search fee(s) will be debited on the last day of the period for payment. For further details see the Arrangements for the automatic debiting procedure, Supplement to OJ EPO 02/1999.

REGISTERED LETTER



European Patent
Office

**SUPPLEMENTARY
PARTIAL EUROPEAN SEARCH REPORT**
under Rule 46, paragraph 1 of the European Patent
Convention

Application Number

EP 01 93 0414

| DOCUMENTS CONSIDERED TO BE RELEVANT | | | |
|---|--|--|--|
| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (Int.Cl.7) |
| X ✓ | PERRET E ET AL: "Improved differential screening approach to analyse transcriptional variations in organized cDNA libraries" GENE: AN INTERNATIONAL JOURNAL ON GENES AND GENOMES, ELSEVIER SCIENCE PUBLISHERS, BARKING, GB, vol. 208, no. 2, 22 February 1998 (1998-02-22), pages 103-115, XP004114934 ISSN: 0378-1119 | 1-3 | C12Q1/68 C12P19/34 C12N9/00 |
| Y | * page 104, column 1, line 33-35 * * page 104, column 2, line 4-30 * --- -/-- | 4,5 | |
| | | | TECHNICAL FIELDS SEARCHED (Int.Cl.7) |
| | | | C12P C12Q |
| LACK OF UNITY OF INVENTION | | | |
| The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely: | | | |
| see sheet B | | | |
| The present partial European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims. | | | |
| Place of search MUNICH | | Date of completion of the search 24 February 2003 | Examiner Helliot, B |
| CATEGORY OF CITED DOCUMENTS | | | |
| X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document | | T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document | |

4
EPO FORM 1503 03.82 (P04C23)



| DOCUMENTS CONSIDERED TO BE RELEVANT | | | CLASSIFICATION OF THE APPLICATION (Int.Cl.7) |
|-------------------------------------|---|-------------------|--|
| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | |
| X ✓ | FELLMANN F ET AL: "Simplified protocol of solid-phase cDNA libraries for multiple PCR amplification." BIOTECHNIQUES. UNITED STATES NOV 1996, vol. 21, no. 5, November 1996 (1996-11), page 766, 768, 770 XP001135191 ISSN: 0736-6205 | 1,3-5 | |
| Y | * page 766, column 3, line 31-34 * * page 766, column 3, line 45-49 * * page 768, column 1, line 10-29 * * page 768, column 1, line 29-57 * | 2 | |
| X ✓ | WO 98 51699 A (LIFE TECHNOLOGIES INC) 19 November 1998 (1998-11-19) * page 8, line 3 * * page 8, line 28 - page 9, line 2 * * page 9, line 18-24 * * page 20, line 4-6 * * page 22, line 7,8 * * page 22, line 22,23 * | 1-5 | TECHNICAL FIELDS SEARCHED (Int.Cl.7) |
| Y ✓ | DEL RIO S.A., MARINO, BELGRADER: "REUSING THE SAME BLOOD-STAINED PUNCH FOR SEQUENTIAL DNA AMPLIFICATIONS AND TYPING" BIOTECHNIQUES, EATON PUBLISHING, NATICK, US, vol. 20, no. 6, June 1996 (1996-06), pages 970-974, XP002929740 ISSN: 0736-6205 * full text * | 1-5 | |
| | --- | -/-- | |



| DOCUMENTS CONSIDERED TO BE RELEVANT | | | CLASSIFICATION OF THE APPLICATION (Int.Cl.7) |
|-------------------------------------|--|-------------------|--|
| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | |
| P, Y ✓ | LIN J-J ET AL: "DETECION OF PLANT GENES USING A RAPID, NONORGANIC DNA PURIFICATION METHOD" BIOTECHNIQUES, EATON PUBLISHING, NATICK, US, vol. 28, no. 2, February 2000 (2000-02), pages 346-350, XP001093853 ISSN: 0736-6205 * material and methods * | 1-5 | |
| P, X ✓ | NATARAJAN P ET AL: "PAPER-BASED ARCHIVING OF MAMMALIAN AND PLANT SAMPLES FOR RNA ANALYSIS" BIOTECHNIQUES, EATON PUBLISHING, NATICK, US, vol. 29, no. 6, December 2000 (2000-12), pages 1328-1333, XP001093852 ISSN: 0736-6205 * material and methods * * page 1333, column 1, line 4-6 * | 1-5 | TECHNICAL FIELDS SEARCHED (Int.Cl.7) |
| P, X ✓ | ROGERS CRAIG D G ET AL: "Reverse transcription of an RNA genome from databasing paper (FTA(R))." BIOTECHNOLOGY AND APPLIED BIOCHEMISTRY, vol. 31, no. 3, June 2000 (2000-06), pages 219-224, XP002231285 ISSN: 0885-4513 * material and methods * | 1-5 | |
| Y ✓ | LAMBERT KRIS N ET AL: "CDNA library construction from small amounts of RNA using paramagnetic beads and PCR." NUCLEIC ACIDS RESEARCH, vol. 21, no. 3, 1993, pages 775-776, XP001145800 ISSN: 0305-1048 * full text * | 1-5 | |



| DOCUMENTS CONSIDERED TO BE RELEVANT | | | CLASSIFICATION OF THE APPLICATION (Int.Cl.7) |
|-------------------------------------|---|-------------------|--|
| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | |
| Y J | SEAH L H ET AL: "DNA databasing on FTAR paper: Biological assault and techniques for measuring photogenic damage." INTERNATIONAL CONGRESS SERIES, no. 1193, 2000, pages 74-77, XP001135278 18th International ISFH; San Francisco, California, USA; August 17-21, 1999, 2000 Elsevier Science B.V. Sara Burgerhartstraat 25, 1000 AE, Amsterdam, Netherlands ISSN: 0-444-50303-X * abstract * ----- | 1-5 | |
| | | | TECHNICAL FIELDS SEARCHED (Int.Cl.7) |
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 93 0414

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

24-02-2003

| Patent document cited in search report | | Publication date | Patent family member(s) | | Publication date |
|---|---|---------------------|----------------------------|---------------|---------------------|
| W0 9851699 | A | 19-11-1998 | EP | 0981535 A1 | 01-03-2000 |
| | | | JP | 2002502237 T | 22-01-2002 |
| | | | W0 | 9851699 A1 | 19-11-1998 |
| | | | US | 2002006615 A1 | 17-01-2002 |
| <hr/> | | | | | |



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-5

The first invention relates to a method to produce one or more cDNA molecules or cDNA libraries wherein:

- i) a sample comprising one or more mRNA templates is contacted with a solid support
- ii) cDNAs is synthesized by contacting mRNA templates with one or more reverse transcriptases

2. Claims: 6-7

The second invention relates to a method for storing RNA molecules wherein:

- i) cells comprising an RNA molecule is contacted to a solid support,
- ii) the cells and the solid support are dried.

The common feature contained in the independent claims 1 and 6 which is the contact of sample comprising one or more RNA template with a solid support is not novel in view of each of the prior art documents D1, D2 and D3.

The document D1 (Perret E. et al. (1998), Gene 208: 103-115) discloses the construction of a cDNA library from mRNA extracted from different rat brain tissues (p. 104, c.1, l. 33-35) wherein:

- i) RNA poly(A)+ is prepared from rat brain using oligo (dT)-magnetic beads (p. 104, c. 2, l. 14-15, relevant for claim 1-a),
- ii) mRNAs are pooled and used for the preparation of cDNA using SuperScript II reverse transcriptase (p. 104, c. 2, l. 17, relevant for claims 1-b and 3).

The document D2 (Fellmann F. et al. (November 1996), BioTechniques 21: 766-770) reports the use of immobilized cDNA libraries for multiple amplifications with beads present in PCR tube (p. 766, c. 3, l. 31-34, relevant for claim 2) wherein:

- i) rat brains are cry-sectioned into 20 μ m-thick sections thaw-mounted on glass slides (p. 766, c. 3, l. 45-49, relevant for claim 1-a),
- ii) tissue fragments are collected, poly(A)+mRNAs are extracted using oligo d(T)-beads and cDNA synthesis is performed with M-MLV reverse transcriptase (p. 768, c. 1, l. 10-29, relevant for claims 1-b and 3).

The document D3 (WO-A-9851699) concerns isolation of mRNA molecules and the production and isolation of cDNA libraries either single- or double-stranded wherein:

- i) the sample containing mRNA and/or poly(A)+ RNA is contacted with one or more primer-adapters (p. 8, l. 28 - p. 9, l. 2, relevant for claim 1-a),



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

ii) the nucleic acid molecules are bound to a solid phase support and the mRNA and/or poly(A)+ are thus isolating from the sample (p. 8, l. 3 and p. 22, l. 7-8, relevant for claim 1-a),

iii) once the contaminants are fully removed, the nucleic acid molecules are released from the solid support (p. 22, l. 22-23, relevant for claim 3).

Therefore, the technical relationship, required by Rule 30 EPC, between the subject-matter of claim 1 relative to the production of one or more cDNA molecule and that of claim 6 relative to the storage of RNA molecule does not involve a special technical feature and the requirement for unity of invention referred to in Article 82 EPC is not fulfilled.